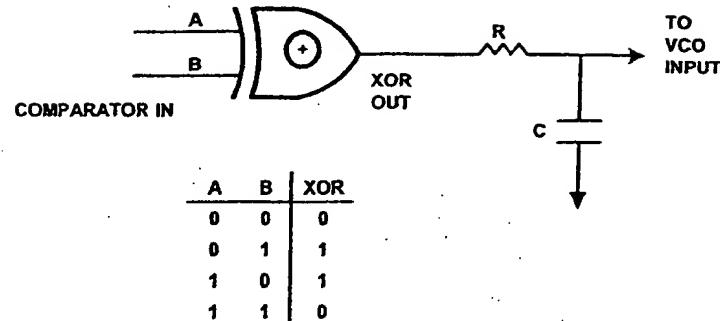


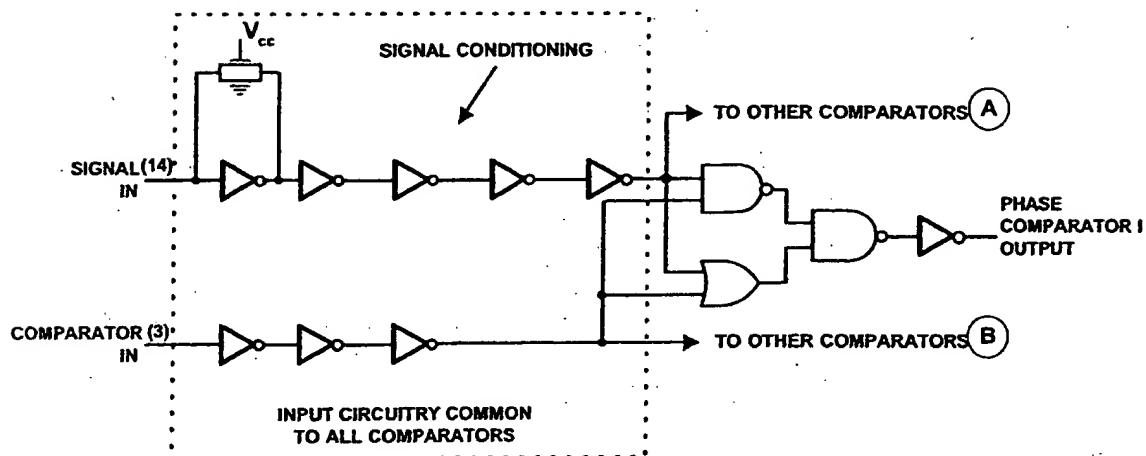


4/8

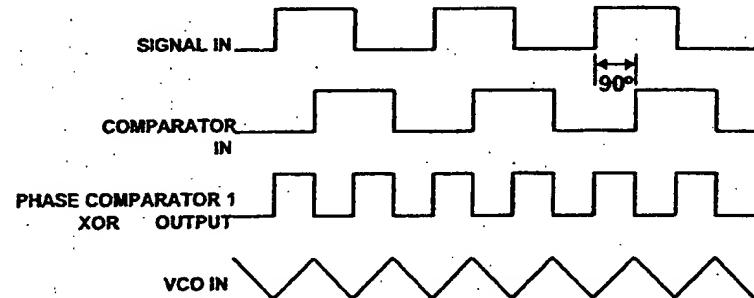
SIGNAL IN



(A) BASIC XOR PHASE COMPARATOR



(B) DETAILED ON-CHIP IC CIRCUITRY IN 74HC4046

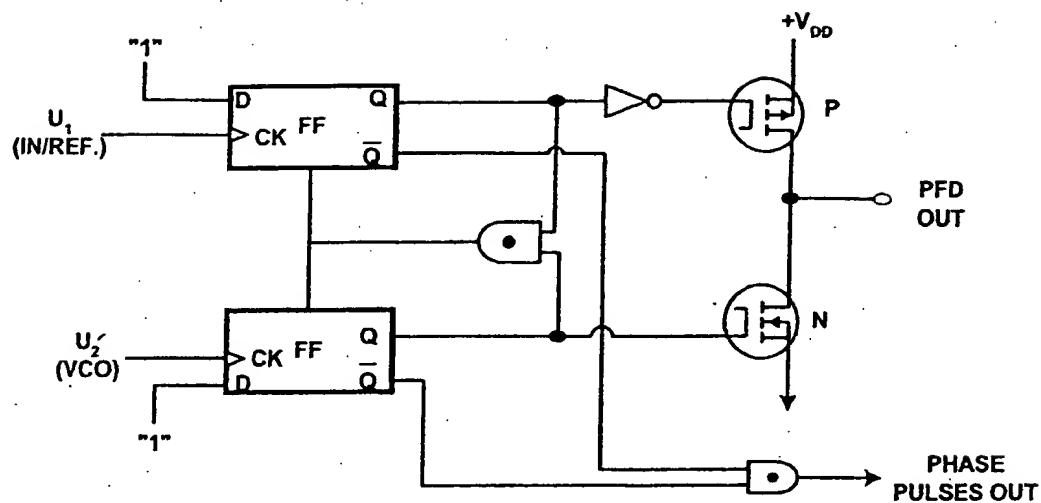


(C) TYPICAL XOR DETECTOR WAVEFORMS

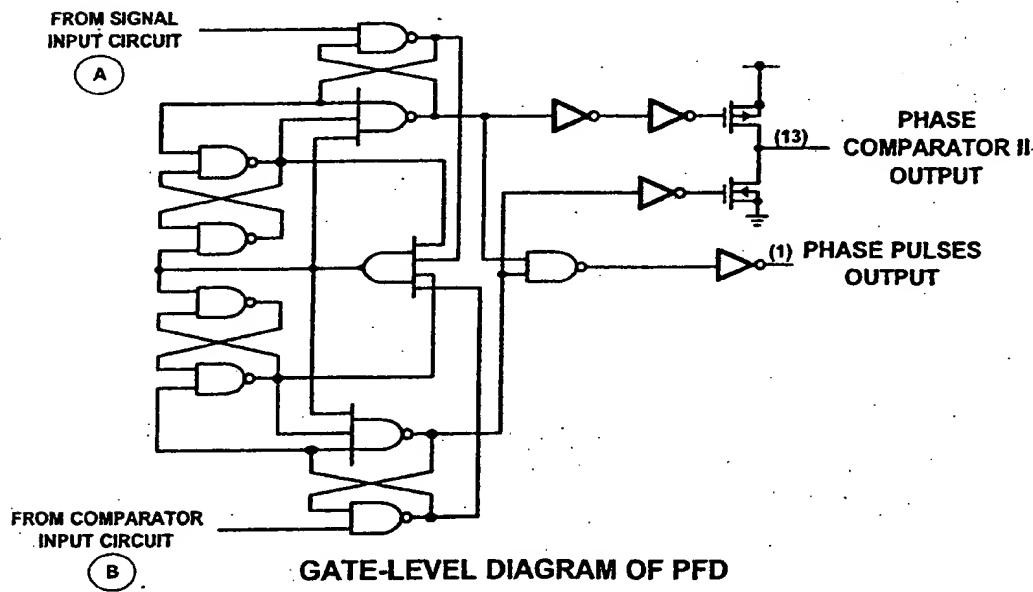
Fig. 4 (Prior Art)



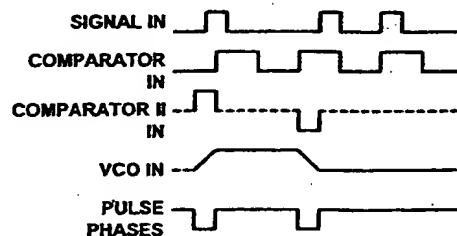
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HIGH-LEVEL DIAGRAM OF PFD (existing art)



GATE-LEVEL DIAGRAM OF PFD



TIMING AND WAVEFORMS OF PFD (existing art)

Fig. 4 cont. (Prior Art)

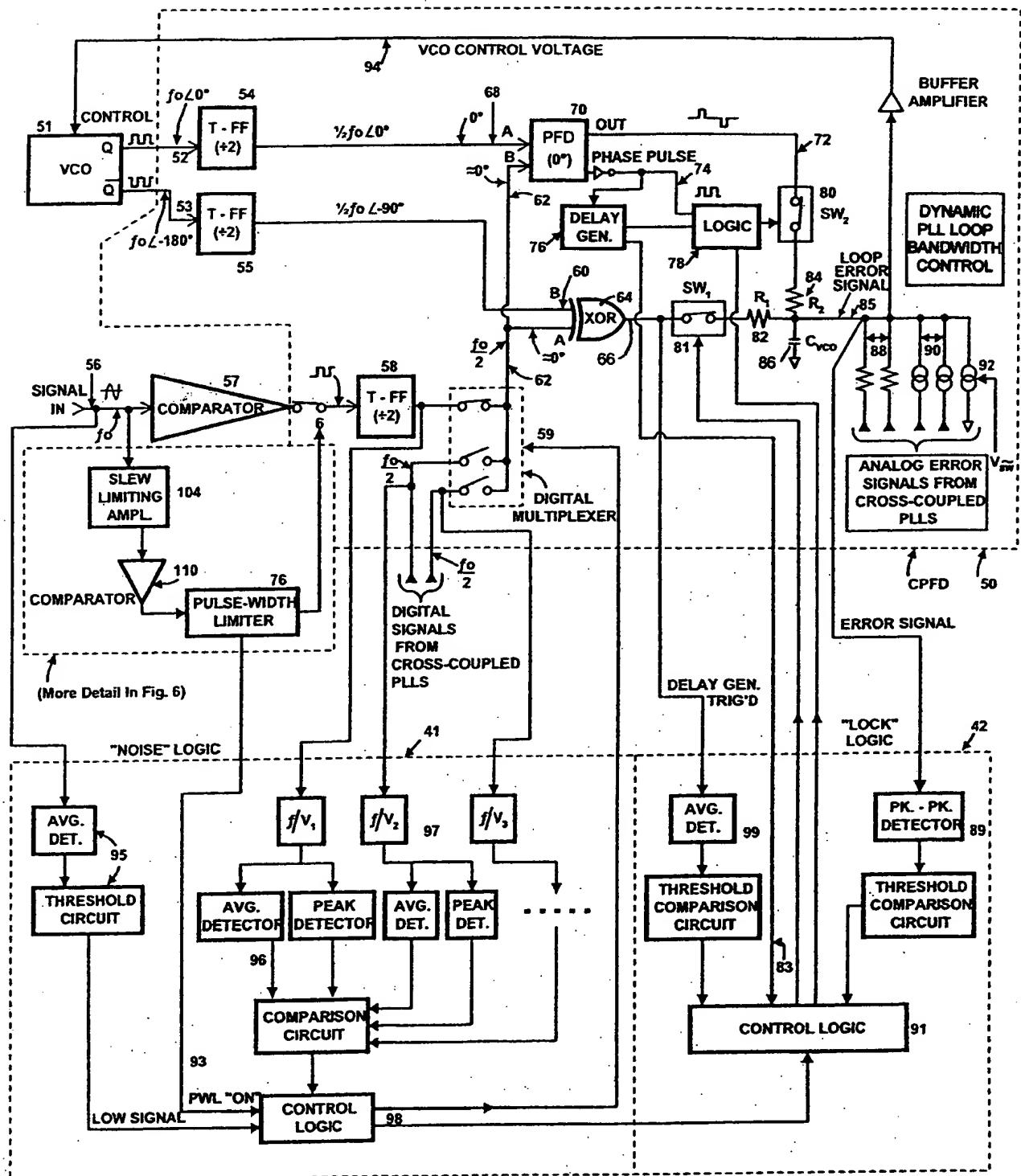


Fig. 5



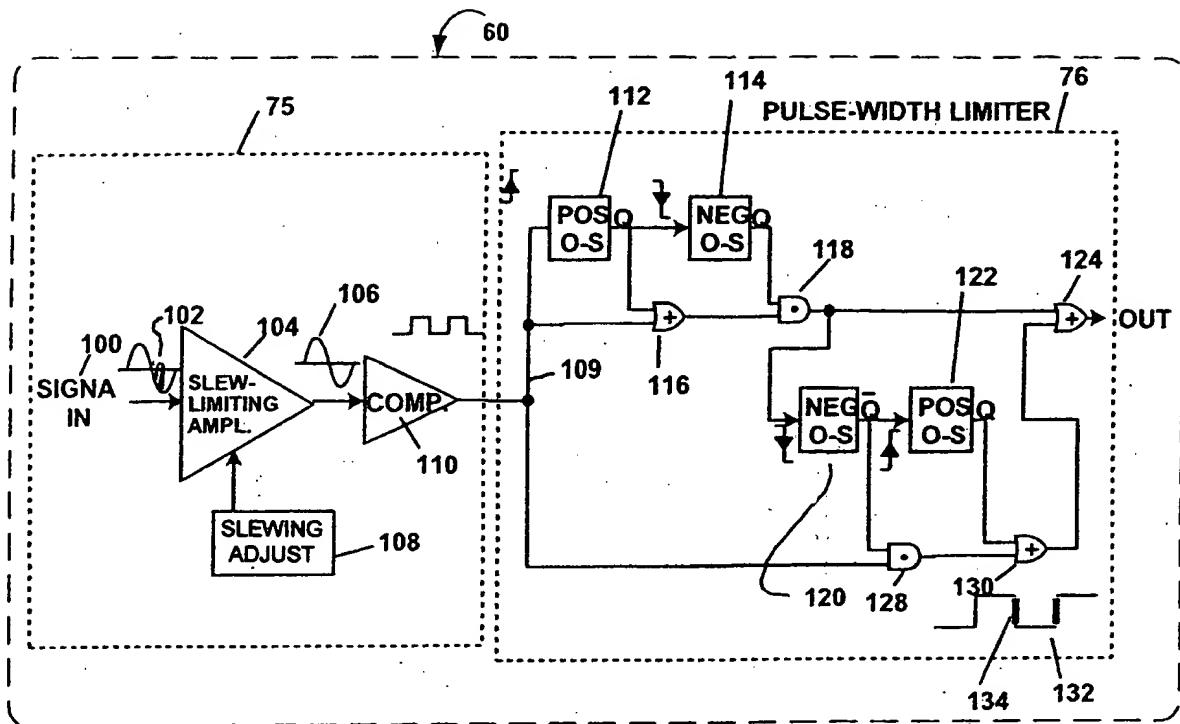


Fig. 6